

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P06263PC00	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE2004/000525	International filing date (day/month/year) 02-04-2004	Priority date (day/month/year) 10-04-2003
International Patent Classification (IPC) or national classification and IPC H04Q 11/00, H04L 5/00, H04J 1/00, H04L 12/42		
Applicant UpZide Labs AB et al		

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.
3.	This report is also accompanied by ANNEXES, comprising: <div style="margin-left: 20px;"> a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows: <div style="margin-left: 20px;"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. </div> </div> <div style="margin-left: 20px;"> b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions). </div>
4.	This report contains indications relating to the following items: <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input checked="" type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application </div>

Date of submission of the demand 09-02-2005	Date of completion of this report 20-04-2005
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2004/000525

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ the international application as originally filed/furnished

☐ the description:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-15</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-15</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-15</u>	YES
	Claims	_____	NO

2. Citations and explanations (Rule 70.7)

The object of the invention is to solve the problem of providing a wire line communication allowing for both long reach and high capacity.

Documents cited in the International Search Report:

D1: WO 9943123, A1

D2: Mestdagh J. G : "Zipper VDSL: a solution for robust duplex communication over telephone lines", IEEE, May 2000.

D3: EP 0991202, A1

D4: US 6333920, B1

D5: US 6373860, B1

Document D1 is considered to represent the closest prior art. D1 relates to a method of using VDSL zipper duplex transmission in an unsynchronised mode, a system employing VDSL zipper duplex transmission, in an unsynchronised mode, over a common twisted pair cable, a transmission system employing the method, a receiver for use with the transmission system, a transmitter for use with the transmission system and a modem, incorporating a receiver and transmitter, for use with the transmission system.

The zipper technique allows the bandwidth to be split dynamically between up- and downstream in almost any proportion without requiring a complex bank of tuneable pass band analogue filters (abstract; page 1, line 1- page 3, line 9 and claims 1-28).

A system using the Zipper technique suffers however from the disadvantage as for VDSL i.e. can not be used for long loops.

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: BOX V

The invention according to independent claims 1 and 7-9 differs from D1 by the step of allocating from said single transceiver different parts of the available bandwidth to different duplex methods simultaneously. This means that the problem of using the method for long loops (ADSL) is not solved by D1. The FDD technique used in D1 is only one flavour of all existing duplex methods.

D2 is a paper that gives an overview of the digital duplex scheme called Zipper, intended for DMT-based VDSL systems. The Zipper multicarrier duplex scheme represents a breakthrough toward digital implementation of frequency-division duplexing. A duplex scheme is a method to divide the capacity of a line between the upstream and downstream directions. Also mentioned that the Zipper duplexing can be made interoperable with ADSL. Interoperability means that not only are the VDSL and ADSL modems spectrally compatible (in particular they have the same subcarrier spacing), but also that the VDSL modem can emulate an ADSL modem (page 94).

Also in D2 there is no suggestion in that Zipper can be used for other duplex methods, and in particular there is no suggestion that Zipper is good when there is a desire to allocate different parts of the spectrum to different duplex methods.

The invention according to independent claims 1 and 7-9 is therefore novel and it is considered to involve an inventive step. The invention is industrial applicable.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claim 10 refers to itself and should depend on claim 9 instead.